CLAIMS

We Claim:

1. A method of writing data to a media storage device comprising:

a. receiving a received packet of data to be written to the media storage device;

b. adding a header to the received packet of data thereby forming an extended packet of data; and

c. storing the extended packet of data onto a media within the media storage device.

2. The method as claimed in claim 1 wherein the header includes a cycle mark value which includes a pattern used to locate cycle boundaries, and a cycle count value specifying a cycle number of a cycle in which the received packet of data was received.

3. The method as claimed in claim 1 wherein the received packet of data is an isochronous packet of data received over an isochronous channel.

4. The method as claimed in claim 1 wherein receiving the received packet of data includes receiving packets of data on multiple channels and further wherein adding a header to the received packet of data includes grouping packets received on multiple channels within a same isochronous cycle into a cycle group of packets and adding the header to the cycle group of packets.

5. The method as claimed in claim 1 wherein adding a header to the received packet of data is performed by an embedded stream processor within the media storage device.

6. The method as claimed in claim 1 wherein the received packet of data is received from a bus structure which substantially complies with a version of an IEEE 1394 standard.

7. The method as claimed in claim 1 wherein the media storage device is a hard disk drive.

8. A method of reading data from a media storage device which has previously been stored with header data generated by the media storage device comprising:

a. locating a first header data, including a cycle mark value having a pattern;

b. reading a previously stored packet of data following the first header data from a media within the media storage device;

c. stripping the first header data from the previously stored packet of data thereby forming a retrieved packet of data; and

d. transmitting the retrieved packet of data to another device.

9. The method as claimed in claim 8 wherein transmitting includes transmitting the manipulated packet of data onto a bus structure which substantially complies with a version of an IEEE 1394 standard.

10. The method as claimed in claim 8 wherein the pattern is used to locate cycle boundaries, and the first header data further includes a cycle count value specifying a cycle number of a cycle in which the previously stored packet of data was received.

11. The method as claimed in claim 8 wherein the retrieved packet is an isochronous packet of data and is transmitted over an isochronous channel.

12. The method as claimed in claim 8 wherein stripping the first header data from the previously stored packet of data is performed by an embedded stream processor within the media storage device.

13. The method as claimed in claim 8 wherein the media storage device is a hard disk drive.

14. The method as claimed in claim 8 wherein locating the first header data, including a cycle mark value having a pattern includes locating the pattern within the previously stored data, then determining if a cycle count value within the first header data is within an appropriate range, determining if an isochronous header follows the first header data and then determining if a data length value includes a legitimate value.

15. The method as claimed in claim 14 wherein the appropriate range is any number including and between 0 and 7999.

16. A method of recovering from an error condition during playback of a recorded stream of data including packets of data and header data comprising:

a. locating a next header data, including a cycle mark value having a pattern;

b. determining if a cycle count value within the next header data is within an appropriate range; and

c. determining if an isochronous header follows the next header data.

17. The method as claimed in claim 16 further comprising determining if a data length value includes a legitimate value.

18. The method as claimed in claim 16 wherein the appropriate range is any number including and between 0 and 7999.

19. A meta data header added to received packets by a media storage device as the packets are recorded on storage media within the media storage device comprising:

a. a cycle mark value including a pattern used to locate cycle boundaries within the received packets; and

b. a cycle count value specifying a cycle number of a cycle in which the received packets are received.

20. The meta data header as claimed in claim 19 wherein the cycle count value has a range between and including 0 and 7999.

21. The meta data header as claimed in claim 19 wherein the received packets are isochronous data packets.

22. The meta data header as claimed in claim 19 wherein the meta data header is added to each received packet.

23. The meta data header as claimed in claim 19 wherein the meta data header is added to each group of received packets received during a same isochronous cycle.

24. A media storage device comprising:

a. means for interfacing configured for receiving a stream of data, thereby forming a received stream of data, and also for transmitting a retrieved stream of data;

b. means for storing data for storing and retrieving the received stream of data; and

c. means for processing coupled to the means for interfacing and to the means for storing for adding header data to the received stream of data as the received stream of data is received and providing the header data and the received stream of data to the means for storing for recording thereby forming a recorded stream of data, the header data including a cycle mark value marking cycle boundaries within the recorded stream of data.

25. The media storage device as claimed in claim 24 wherein the means for processing is an embedded stream processor which also locates a first cycle mark value within the recorded stream of data during a playback operation, reads packets within the recorded stream of data after the first cycle mark value, strips the header data from read packets within the recorded stream of data thereby forming retrieved packets of data and transmits the retrieved packets of data through the means for interfacing to a receiving device.

26. The media storage device as claimed in claim 25 wherein the receiving device is coupled to the means for interfacing by a bus structure which substantially complies with a version of an IEEE 1394 standard.

27. The media storage device as claimed in claim 25 wherein the embedded stream processor locates the first cycle mark value by locating a pattern included within the cycle mark value, then determining if a cycle count value within the header data is within an appropriate range, determining if an isochronous header follows the header data and then determining if a data length value includes a legitimate value.

28. The media storage device as claimed in claim 27 wherein the appropriate range is any number including and between 0 and 7999.

29. The media storage device as claimed in claim 24 wherein the header data further includes a cycle count value specifying a cycle number of a cycle in which packets of data within the received stream of data were received.

30. A media storage device comprising:

a. an interface circuit configured to receive a stream of data, thereby forming a received stream of data, and also to transmit a retrieved stream of data;

b. storage media configured to store and retrieve the received stream of data; and

c. an embedded stream processor coupled to the interface circuit and to the storage media to add header data to the received stream of data as it is received and provide the header data and the received stream of data to the storage media for recording to form a recorded stream of data, the header data including a cycle mark value marking cycle boundaries within the recorded stream of data.

31. The media storage device as claimed in claim 30 wherein the embedded stream processor also locates a first cycle mark value within the recorded stream of data during a playback operation, reads packets within the recorded stream of data after the first cycle mark value, strips the header data from read packets within the recorded stream of data thereby forming retrieved packets of data and transmits the retrieved packets of data through the interface circuit to a receiving device.

32. The media storage device as claimed in claim 31 wherein the receiving device is coupled to the media storage device by a bus structure which substantially complies with a version of an IEEE 1394 standard.

33. The media storage device as claimed in claim 31 wherein the embedded stream processor locates the first cycle mark value by locating a pattern included within the cycle mark value, then determining if a cycle count value within the header data is within an appropriate range, determining if an isochronous header follows the header data and then determining if a data length value includes a legitimate value.

34. The media storage device as claimed in claim 33 wherein the appropriate range is any number including and between 0 and 7999.

35. The media storage device as claimed in claim 30 wherein the header data further includes a cycle count value specifying a cycle number of a cycle in which packets of data within the received stream of data were received.

36. A network of devices comprising:

a. a source device which generates isochronous source packets of data each including an isochronous packet header and a data payload;

b. a receiving device which utilizes isochronous data; and

c. a media storage device including:

i. an interface circuit coupled to the source device for receiving the isochronous source packets of data, thereby forming a received stream of data, and also coupled to the receiving device for transmitting a retrieved stream of data;

ii. storage media for storing and retrieving the received stream of data; and

iii. an embedded stream processor coupled to the interface circuit and to the storage media for adding header data to the received

stream of data as it is received and providing the header data and the received stream of data to the storage media for recording thereby forming a recorded stream of data, the header data including a cycle mark value marking cycle boundaries within the recorded stream of data.

37. The network of devices as claimed in claim 36 wherein the embedded stream processor also locates a first cycle mark value within the recorded stream of data during a playback operation, reads packets within the recorded stream of data after the first cycle mark value, strips the header data from read packets within the recorded stream of data thereby forming retrieved packets of data and transmits the retrieved packets of data through the interface circuit to the receiving device.

38. The network of devices as claimed in claim 37 wherein the embedded stream processor locates the first cycle mark value by locating a pattern included within the cycle mark value, then determining if a cycle count value within the header data is within an appropriate range, determining if an isochronous header follows the header data and then determining if a data length value includes a legitimate value.

39. The network of devices as claimed in claim 38 wherein the appropriate range is any number including and between 0 and 7999.

40. The network of devices as claimed in claim 36 wherein the source device, the receiving device and the media storage device are coupled together by a bus structure which substantially complies with a version of an IEEE 1394 standard.

41. The network of devices as claimed in claim 36 wherein the header data further includes a cycle count value specifying a cycle number of a cycle in which packets of data within the received stream of data were received.

42. The network of devices as claimed in claim 36 wherein the isochronous source packets each further include a CIP header.

43. The network of devices as claimed in claim 36 wherein the receiving device is a display device.